

U.S. Patent Application Serial No. 10/606,928
Amendment filed November 15, 2006
Reply to OA dated May 25, 2006

REMARKS

Claims 1-4 are pending in this application. The present amendment cancels claim 2 without prejudice or disclaimer and amends claim 1. Upon entry of this amendment, claims 1, 3 and 4 will be pending.

The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **May 25, 2006**.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bando et al. (5,965,295) in view of Maeda et al. (6,338,917). (Office action paragraph no. 3)

The rejection of claims 1, 3 and 4 is overcome by the amendment to claim 1.

Claim 1 has been amended to incorporate the limitation of claim 2, and Applicant submits that claim 1, as amended, has the scope of claim 2 before the present amendment. Claim 2 has accordingly been canceled, but Applicant submits that claim 2 was not obvious over Bando et al. and Maeda et al.

The invention of amended claim 1 is an alkaline storage battery, wherein at least one species of a compound selected from the group consisting of niobium compound, titanium compound, tungsten compound and molybdenum compound is introduced into the nickel cathodes comprising a cathode active material composed mainly of nickel hydroxide, and the alkaline electrolytic solution contains lithium hydroxide, a lithium hydroxide content being not less than 0.6 mol / L and not more

than 1.6 mol /L, which surface has a coating layer of a cobalt compound, wherein the cobalt compound is a cobalt compound containing alkali metal ions.

The effect of lithium hydroxide content in the alkaline electrolytic solution being not less than 0.6 mol / L is described in the specification in the disclosure that “the layer of the cobalt compound becomes denser in structure” (page 7, lines 16-17). In addition, the effect of the cobalt compound containing alkali metal ions is described in the specification in the disclosure that “if the layer of the cobalt compound contains alkaline cations, the conductivity of the layer of the cobalt compound is further enhanced, so that the layer of the cobalt compound is preferably a layer of a cobalt compound containing alkaline cations” (page 8, lines 2-6). (In the amendment of March 14, 2006, “alkaline cations” was amended in the claims to --alkali metal ions--, for clarity.) Furthermore, the high content of the alkali metal ions enhances the layer of the cobalt compound to become denser in structure.

Therefore, a cooperation of the alkali metal ions contained in the cobalt compound, at least one species of a compound selected from the group consisting of niobium compound, titanium compound, tungsten compound and molybdenum compound which is introduced into the nickel cathodes, and the lithium hydroxide content in the alkaline electrolytic solution being not less than 0.6 mol / L enables “an excellent electrically conductive network to be maintained in the nickel cathodes” (page 7, lines 17-18), and shows a remarkable effect of enhancing recharging efficiency of the battery.

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On the other hand, Maeda et al. '917 discloses addition of a metal and/or an oxide of titanium or niobium to the cobalt compound. **However, it is not described in Maeda et al. that the cobalt compound contains alkali metal ions.** The lithium hydroxide content in the alkaline electrolytic solution is also not described in Maeda et al. As the lithium hydroxide content in the alkaline electrolytic solution and the alkali metal ions contained in the cobalt compound are not disclosed in Maeda et al., the cooperation discussed above is also not described in Maeda et al.

Bando et al. discloses nickel cathodes including a cathode active material composed mainly of nickel hydroxide, having a coating layer of a cobalt compound, and the content of lithium hydroxide in the alkaline electrolytic solution being 0.5 to 1.5 M, and that the cobalt compound may be cobalt hydroxide. **However, there is no disclosure in Bando et al. that the cobalt compound coating nickel compound contains alkali metal ions such as sodium ion.** Furthermore, the cooperation described above is not disclosed or suggested in Bando et al.

Therefore, there is no teaching, suggestion or disclosure in either Maeda et al. or Bando et al. for the presence of alkali metal ions in the cobalt compound in the electrode, and there can be no *prima facie* case of obviousness for claim 1.

In addition, as noted above, the present specification discloses a remarkable effect of enhancing the recharging efficiency of the battery, associated with cooperation between the alkali metal ions in the cobalt compound, and the recited "one species of compound ... introduced into the

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nickel cathodes.” There is no suggestion of such an effect in Maeda et al. and Bando et al., and this effect must be considered to represent “unexpected results” over the cited references.

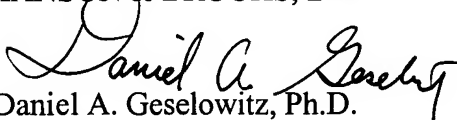
Claims 1, 3 and 4 are therefore not obvious over Maeda et al. and Bando et al., taken separately or in combination.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP


Daniel A. Geselowitz, Ph.D.

Agent for Applicant
Reg. No. 42,573

DAG/bh
Atty. Docket No. 030777
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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